Exhibit B

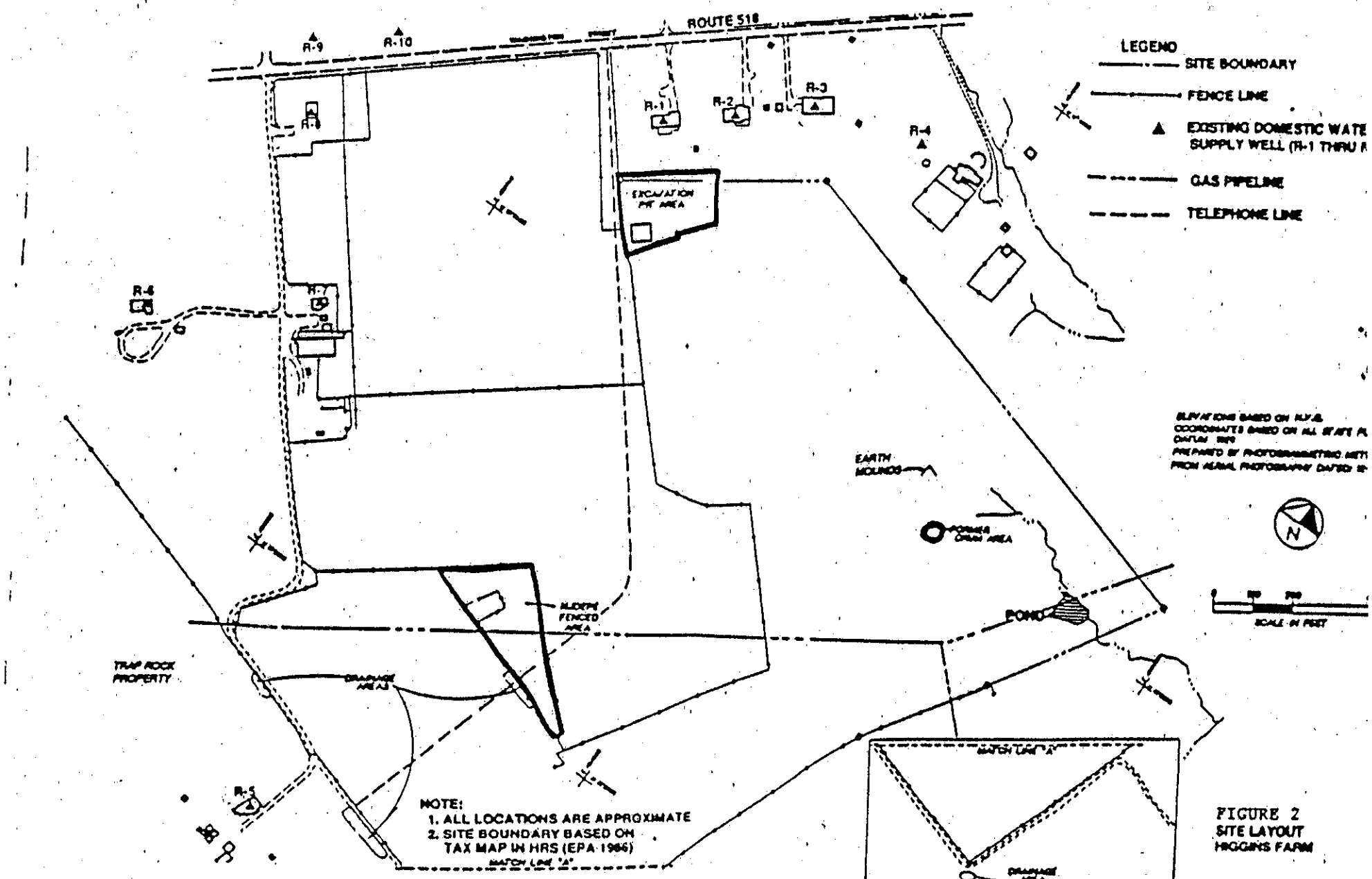
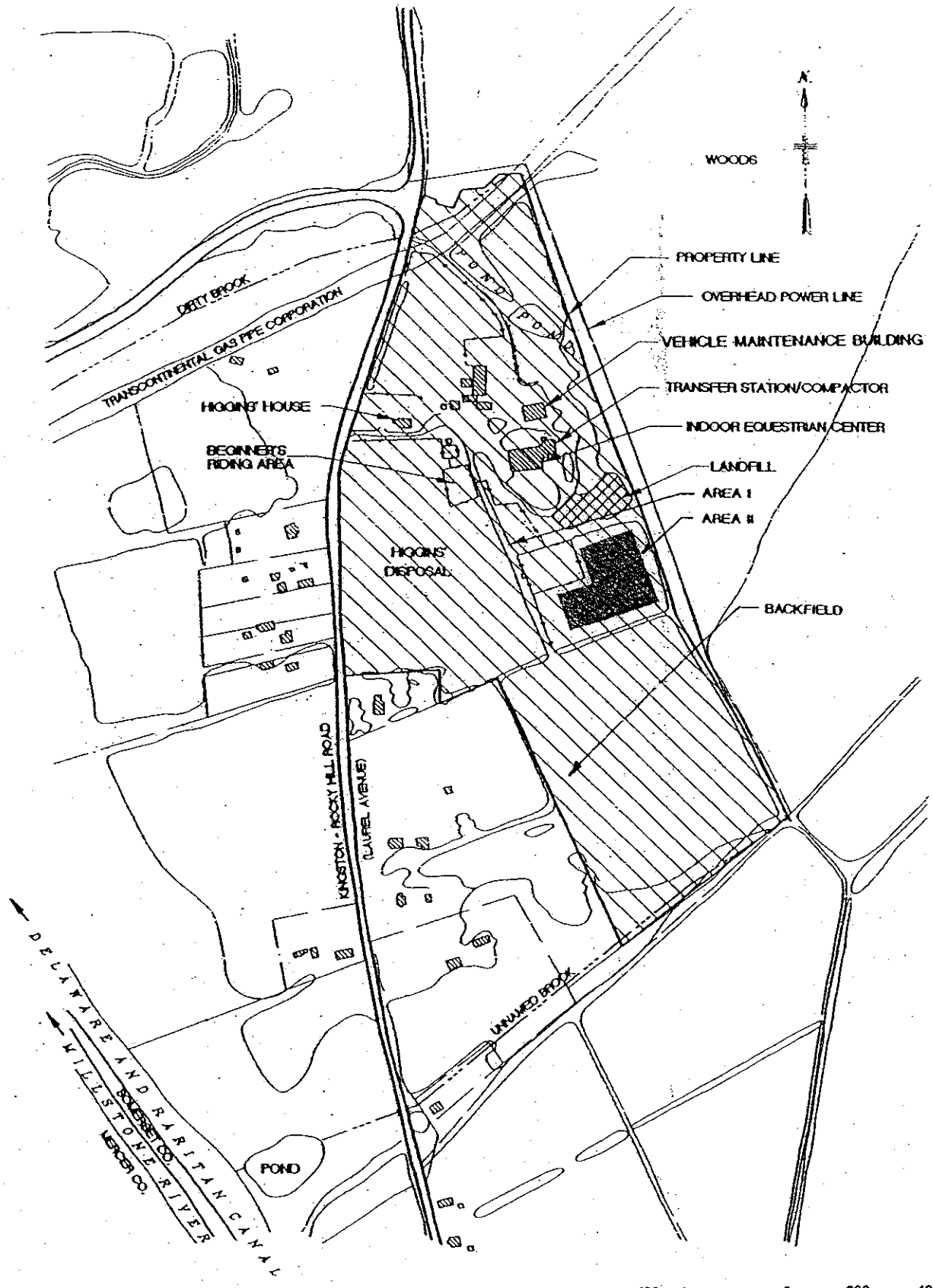


FIGURE 2
SITE LAYOUT
HIGGINS FARM

Exhibit C



SOURCE: AERIAL PHOTOGRAPH KAS86-01 24-3012 (MARCH 25, 1986)

MALCOLM PIRNIE

HIGGINS DISPOSAL
KINGSTON, NEW JERSEY

HIGGINS DISPOSAL PLAN

MALCOLM PIRNIE, INC.

FIGURE 1-3

Exhibit D

STATEMENT OF WORK
Higgins Farm Superfund Site

I. WORK TO BE PERFORMED

The Work to be performed by the Settling Defendant pursuant to the Consent Decree to which this Statement of Work ("SOW") is appended shall, at a minimum, be consistent with and achieve the requirements of the remedy selected by the U.S. Environmental Protection Agency ("EPA") for the Higgins Farm Superfund Site ("Site") in the September 30, 1992 Record of Decision ("ROD") (attached as Appendix A to the Consent Decree), the Quality Assurance Project Plan, the Field Sampling Plan and the Operation and Maintenance ("O&M") Manual approved by EPA.

Specifically, the Work shall include the following activities:

- Accepting transfer from EPA of ownership and responsibility for the building, equipment and other appurtenant infrastructure of the groundwater treatment system at the Site;
- Performance of Remedial Action through operation and maintenance of the groundwater extraction/treatment/discharge system ("O&M system") in accordance with the ROD until EPA determines that all Performance Standards have been achieved;
- Performance of an EPA-approved monitoring program to measure the progress of the groundwater remediation;
- O&M system decommissioning and restoration of the Site after satisfactory completion of the O&M phase and post-remediation monitoring;
- Establishing a classification exception area ("CEA") for impacted groundwater, if required by New Jersey Department of Environmental Protection ("NJDEP");
- Investigating and delineating the groundwater contamination that may have migrated beyond the Higgins Farm property borders and its potential impact on human health and the environment, and remediation of any such contamination, as determined necessary by EPA.

II. PERFORMANCE STANDARDS

The Work to be performed shall comply with all cleanup criteria, including applicable or relevant and appropriate requirements, or ARARs, as set forth herein and in the ROD.

A. The groundwater O&M system will be operated until groundwater cleanup levels, as set forth in the ROD, have been achieved throughout the Capture Zone for the Site for a period of three (3) consecutive years, or a shorter period if approved by EPA in its sole discretion. The Capture Zone shall mean the groundwater flowpaths which contribute water to the Site groundwater extraction system, including all upgradient water from the contaminant source(s) which flows towards and eventually arrives at the groundwater extraction wells at the Site.

B. Effluent produced by the groundwater O&M system shall comply with the New Jersey Pollution Discharge Elimination System ("NJPDES") permit equivalency. Effluent from the O&M system shall comply with the criteria set forth in the ROD, Table 17. A copy of the permit equivalency for the discharge requirements is attached hereto as Attachment A. Proposed modification to the NJPDES permit equivalency may be submitted for NJDEP's and EPA's consideration. The Settling Defendant shall be required to conduct all engineering and testing associated with compliance issues. The Settling Defendant may implement changes to the groundwater O&M system following approval by NJDEP and approval by EPA in writing by the Chief of the New Jersey Remediation Branch, Emergency and Remedial Response Division, of any modification to the discharge criteria. If such proposed modification is approved by EPA, EPA may subsequently modify the ROD, as it deems necessary, and in accordance with the National Contingency Plan, to reflect the modification to the discharge criteria.

III. PROJECT SUPERVISION/MANAGEMENT; SUPERVISING CONTRACTOR

All aspects of the Work to be performed by Settling Defendant pursuant to this SOW and Sections VII (Performance of the Work by Settling Defendant), VIII (Remedy Review), IX (Quality Assurance, Sampling and Data Analysis), and XVI (Emergency Response) of the Consent Decree shall be coordinated by a qualified Project Coordinator (in accordance with Section XIII of the Consent Decree) and shall be under the direction and supervision of one or more qualified Supervising Contractors (in accordance with Section VII of the Consent Decree). Within ten (10) days after the lodging of the Consent Decree, Settling Defendant shall notify EPA in writing of the name, title, and qualifications of any contractor proposed to be Supervising Contractor. All aspects of the Work required to be performed under the Consent Decree shall meet any and all requirements of applicable Federal, State of New Jersey ("State"), and local laws. To the extent that components of the Work require the practice of engineering, such components shall be performed under the direction and supervision of a qualified New Jersey State-licensed professional engineer.

IV. OPERATION AND MAINTENANCE PLANNING

Prior to the lodging of the Consent Decree, the Settling Defendant shall submit to EPA (with a copy to NJDEP) a detailed O&M Manual. The O&M Manual shall incorporate and provide for

the continued implementation of O&M. The O&M Manual shall include a detailed description of the activities, technical approaches, operations, monitoring, and overall management strategy for the O&M phase. Required procedures, inspections, reporting, deliverables, and schedules shall be specified. The O&M Manual shall also identify the members of the Settling Defendant's O&M project team.

The O&M Manual shall also include the following elements, if determined necessary by EPA before approval of any future modifications of the O&M Manual:

A. Schedule

The Settling Defendant shall include a schedule for O&M system activities commencing with the date of entry of the Consent Decree. The schedule shall include reporting requirements, initiation and completion of any critical path activities, project milestones and deliverables, as well as provide adequate review times for EPA.

B. Site Management Planning

The Settling Defendant shall include Site management planning for O&M activities required to be performed under this SOW. Site management planning shall include, at a minimum, the following:

1. Typical daily and weekly operator records;

2. Provisions for security, utilities, decontamination facilities, construction trailers, equipment storage, contingency procedures, management responsibilities, and waste handling and disposal, as appropriate;

3. Coordination with local authorities regarding contingency planning, potential traffic issues, etc.;

4. Access to the Site during the O&M period, including any periods of inactivity;

5. Procedures for security measures, property maintenance, snow-clearing, equipment deliveries, off-site disposal, Site restoration, etc.;

6. A discussion of potential operating problems and remedies for such problems;

7. A discussion of alternative procedures in the event of system failure;

8. A schedule for equipment replacement;

9. Coordination of all activities within the pasture area with the land owner; and

10. Secure or transfer, as necessary, the permits or their equivalencies which are required to perform the work under the SOW.

C. Waste Management Planning

The Settling Defendant shall include waste management planning for activities which generate disposable waste, including filter press dewatering, soil sampling, decontamination procedures, on-premise laboratory work, etc. Waste management planning shall also describe the management and disposal of any hazardous substances, pollutants, contaminants, or other waste materials that are encountered or generated during operation and maintenance.

EPA will either approve the O&M Manual or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree.

V. QUALITY ASSURANCE/QUALITY CONTROL PROJECT PLANNING AND FIELD SAMPLING PLAN

Prior to the lodging of the Consent Decree, the Settling Defendant shall submit to EPA (with a copy to NJDEP) a detailed Quality Assurance Project Plan ("QAPP") and a Field Sampling Plan ("FSP") for EPA's approval.

The QAPP and FSP shall include or be in accordance with the following elements, if determined necessary by EPA before approval of any future modifications of the QAPP or FSP:

A. A detailed description of the sampling, analysis, and monitoring that shall be performed during the O&M phase, consistent with this SOW, the State effluent discharge criteria (see Attachment A permit equivalency), the ROD, the Consent Decree, and the O&M Manual.

B. All sampling, analysis, data assessment, and monitoring shall be performed in accordance with the Region II CERCLA Quality Assurance Manual, Revision 1, EPA Region II, dated October 1989, and any updates thereto, and the guidelines set forth in the Consent Decree. All testing methods and procedures shall be fully documented and refer to established methods or standards.

C. The QAPP shall include data quality assurance planning for all sampling activities consistent with EPA Requirements for Quality Assurance Project Plans (QA/R5) (EPA/240/B-01/003, March 2001) and Intergovernmental Data Quality Task Force, Uniform Federal Policy for Quality Assurance Project Plan (Final

Version 1, EPA 505-B-04-900-A, March 2005).

D. The FSP shall specifically include the following items:

1. A detailed description explaining the sampling, analysis, testing, and monitoring, and how the data for the O&M phase will be collected and recorded;

2. All sampling, analysis, data assessment, and monitoring that shall be performed in accordance with the approved QAPP and the guidelines set forth in the Consent Decree. All testing methods and procedures shall be fully documented and referenced to established methods or standards;

3. Provisions to submit data in electronic format acceptable to EPA;

4. A map depicting sampling locations; and

5. A schedule for performance of specific tasks.

E. In the event that additional sampling locations, testing, and analyses are utilized or required, the Settling Defendant shall submit to EPA an addendum to the QAPP or FSP for approval by EPA.

F. The QAPP shall address, but not be limited by, the following elements:

Project Management

1. Title and Approval Sheet
2. Table of Contents and Document Control Format
3. Distribution List
4. Project/Task Organization and Schedule
5. Problem Definition/Background
6. Project/Task Description
7. Quality Objectives and Criteria for Measurement Data
8. Special Training Requirements/Certification
9. Documentation and Records

Measurement/Data Acquisition

10. Sampling Process Design
11. Sampling Methods Requirements
12. Sample Handling and Custody Requirements
13. Analytical Methods Requirements
14. Quality Control Requirements
15. Instrument/Equipment Testing, Inspection, and Maintenance

Requirements
16. Instrument Calibration and Frequency
17. Inspection/Acceptance Requirements for Supplies and Consumables
18. Data Acquisition Requirements Non-Direct Measurements
19. Data Management

Assessment/Oversight

20. Assessments and Response Actions
21. Reports to EPA

Data Validation and Usability

22. Data Review, Validation, and Verification Requirements
23. Validation and Verification Methods
24. Reconciliation with Data Quality Objectives

G. In order to provide quality assurance and maintain quality control with respect to all samples to be collected, the Settling Defendant shall ensure the following:

1. Quality assurance and chain-of-custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the Region II CERCLA Quality Assurance Manual, Revision 1, EPA Region II, dated October 1989, and any updates thereto, and the guidelines set forth in the Consent Decree.

2. The laboratory to be used must be specified. If the laboratory participates in the Contract Laboratory Program ("CLP") for the analysis to be performed, then project specific Performance Evaluation ("PE") samples will not be required, since CLP laboratories run EPA PEs on a quarterly basis. If the proposed laboratory does not participate in the CLP for the analyses required, PE samples must be analyzed to demonstrate the capability to conduct the required analysis prior to being approved for use. Once a non-CLP laboratory has been selected, the laboratory should submit a copy of their Laboratory Quality Assurance Program Plan to EPA for review and approval.

   For any analytical activities performed at a non-CLP laboratory, including that done in a fixed laboratory, in a mobile laboratory, or in on-site screening analyses, Settling Defendant must submit to EPA a "Non-CLP Superfund Analytical Services Tracking System" form for each laboratory utilized during a sampling event, within thirty (30) days after receipt of the analytical results. Upon completion, such documents shall be submitted to the EPA Remedial Project Coordinator, with a copy of the form and transmittal letter to:

Regional Sample Control Center Coordinator
USEPA Region II
Division of Environmental Science & Assessment
2890 Woodbridge Avenue, Bldg. 209, MS-215
Edison, NJ 08837

3. The laboratory utilized for analyses of samples must perform all analyses according to accepted EPA methods as documented in the Contract Lab Program Statement of Work for Organic Analysis, (OLM04.2) or the latest revision, and the Contract Lab Program Statement of Work for Inorganic Analysis, (ILM04.0) or the latest revision, or other EPA-approved methods.

4. Unless indicated otherwise in the approved QAPP, all data will be validated upon receipt from the laboratory.

5. Submission of the validation package (checklist, report and Form I containing the final data) to EPA, prepared in accordance with the provisions of Paragraph V.G.7., below.

6. Assurance that all analytical data that are validated as required by the QAPP are validated according to the procedures stated in the EPA Region II data validation Standard Operating Procedures which are available at: *http://www.epa.gov/region02/ qa/documents.htm.*

7. Unless indicated otherwise in the EPA-approved QAPP, the Settling Defendant shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon EPA's request, the Settling Defendant shall submit to EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data.

8. The Settling Defendant shall insert a provision in its contract(s) with the laboratory utilized for analyses of samples, which will require granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.

EPA will either approve the QAPP and FSP or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree.

VI. HEALTH AND SAFETY PLANNING

Prior to the lodging of the Consent Decree, the Settling Defendant shall submit to EPA (with a copy to the NJDEP) a detailed Health and Safety Plan ("HSP") for all field activities performed under the Consent Decree, to address the protection of public health and safety and the response to contingencies that could impact public health, safety, and the environment. The HSP shall satisfy the requirements of the Occupational Safety and Health Guidance for Hazardous Waste Site Activities, (June 1990, DHHS NIOSH Publication No. 90-117), and the Occupational Safety and Health Administration ("OSHA"), United States Department of Labor requirements cited below:

A. All Site activities shall be performed in a manner which ensures the safety and health of personnel involved. All Site activities shall be conducted in accordance with all pertinent general industry (29 C.F.R. § 1910) and construction (29 C.F.R. § 1926) OSHA standards, and EPA's Standard Operating Safety Guides (OSWER, 1988), as well as any other applicable State and municipal codes or ordinances. All Site activities shall comply with those requirements set forth in OSHA's final rule entitled Hazardous Waste Operations and Emergency Response, 29 C.F.R. § 1910.120, Subpart H.

B. The HSP shall include, at a minimum, the following items, if determined necessary by EPA before approval of any future modifications of the HSP:

1. Plans showing the location and layout of any temporary facilities to be constructed;

2. Description of the known hazards and evaluation of the risks associated with the Site and the potential health impacts related to Site activities;

3. List of key personnel and alternates responsible for Site safety, response operations, and protection of the public;

4. Description of levels of protection (based on EPA-approved standards) to be utilized by all personnel;

5. Delineation of work zones, decontamination, and safe zones, and definitions of the movement of zones;

6. Description of decontamination procedures for personnel and equipment, including handling and removal of disposable clothing or equipment;

7. Incidental emergency procedures which address emergency care for personnel injuries and exposure problems, and containment measures. These procedures shall include evacuation routes, internal and external communications procedures for response to fire, explosion, or other

emergencies, the name of the nearest hospital and the route to that hospital. Local agencies with the capability to respond to emergencies shall be identified, and their capabilities shall be described. A description of the procedures for informing the community of these measures shall be outlined;

8. Description of the personnel medical surveillance program in effect;

9. Description of monitoring for personnel safety;

10. Description of routine and special personnel training programs; and

11. Description of an air monitoring program to determine concentrations of airborne contaminants and particulates to which Site workers and persons at and beyond Site boundary, including the nearby residential community, may be exposed.

VII. PERFORMANCE OF REMEDIAL ACTION

A. Within thirty (30) days of the lodging of the Consent Decree, the Settling Defendant shall commence O&M activities in accordance with the O&M Manual, the State effluent discharge criteria, the ROD, and the Consent Decree, and shall continue Remedial Action activities until EPA determines that the Performance Standards for the remedy selected by the 1992 ROD, or as they may be modified by EPA in the future, are achieved and for so long thereafter as is otherwise required under the Consent Decree.

B. Certification of the Completion of Remedial Action

After Settling Defendant concludes that the Remedial Action (including O&M and the groundwater investigation) has been fully performed and the Performance Standards have been attained, Settling Defendant shall schedule and conduct a pre-certification inspection to be attended by EPA and the State. If, after the pre-certification inspection, Settling Defendant still believes that the Remedial Action has been fully performed and the Performance Standards have been attained, it shall submit to EPA a Notice of Completion and a Final Remedial Action Report requesting certification to EPA for approval, with a copy to the State, pursuant to Section XII (EPA approval of Plans and Other Submissions) of the Consent Decree within thirty (30) days of the inspection. In the Final Remedial Action Report, a New Jersey State-licensed professional engineer and Settling Defendant's Project Coordinator shall state that the Remedial Action has been completed in full satisfaction of the requirements of the Consent Decree.

C. The Final Remedial Action Report

The Final Remedial Action Report shall include all appropriate data relating to the Remedial Action including annual data summaries for the operation and maintenance; for each Performance Standard, a description of the Standard, the basis for determining that the Standard is met, the location and frequency of the tests, and the results of confirmatory sampling locations and sampling depths.

The Final Remedial Action Report shall include the following items. For any item listed below, Settling Defendant may summarize or incorporate the October 22, 1999 Remedial Action Report into the Final Remedial Action Report to meet that portion of the requirement that covers the time period prior to Settling Defendant's commencement of operation of the O&M system.

1. Introduction

   a. Include a brief description of the location, size, environmental setting, and operational history of the Site.

   b Describe the operations and waste management practices that contributed to contamination of the Site.

   c. Describe the regulatory and enforcement history of the Site.

   d. Describe the major findings and results of Site investigation activities.

   e. Describe prior removal and remedial activities at the Site.

2. Background

   a. Summarize requirements specified in the ROD. Include information on the cleanup goals, institutional controls, monitoring requirements, operation and maintenance requirements, and other parameters applicable to the design, construction, operation, and performance of the Remedial Action.

   b. Provide additional information regarding the basis for determining the cleanup goals, including planned future land use.

   c. Identify and briefly discuss any ROD amendments, explanation of significant differences, or technical impracticability waivers.

3. Chronology of Events

   a. Provide a tabular summary that lists the major events for the

Remedial Action, and associated dates of those events, starting with ROD signature.

b. Include significant milestones and dates, such as, remedial design submittal and approval; ROD amendments; mobilization and construction of the remedy; significant operational events such as treatment system, application start-up, monitoring and sampling events, system modifications, operational down time, variances or noncompliance situations, and final shutdown or cessation of operations; final sampling and confirmation-of-performance results; required inspections; demobilization; and completion or startup of post-construction O&M activities.

4. Performance Standards and Construction Quality Control

a. Describe the overall performance of the technology in terms of comparison to cleanup goals.

b. For treatment remedies, identify the quantity of material treated, the strategy used for collecting and analyzing samples, and the overall results from the sampling and analysis effort.

c. Provide an explanation of the approved construction quality assurance and construction quality control requirements or cite the appropriate reference for this material. Explain any substantial problems or deviations.

d. Provide an assessment of the performance data quality, including the overall quality of the analytical data, with a brief discussion of QA/QC procedures followed, use of a QAPP and comparison of analytical data with data quality objectives.

5. Final Inspection and Certifications

a. Report the results of the various Remedial Action contract inspections, and identify noted deficiencies.

b. Briefly describe adherence to health and safety requirements while implementing the Remedial Action. Explain any substantial problems or deviations.

c. Summarize details of the institutional controls (*e.g.*, the type of institutional control, who will maintain the control, who will enforce the control).

d. Describe results of pre-certification inspection.

e. This section shall include a certification statement, signed by a responsible corporate official of the Settling Defendant or by the Settling Defendant's Project Coordinator, which states the following:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

D. If, after completion of the pre-certification inspection and receipt and review of the Final Remedial Action Report, EPA after reasonable opportunity to review and comment by the State, determines that the Remedial Action or any portion thereof has not been completed in accordance with the Consent Decree, or that the Performance Standards have not been achieved, EPA will notify Settling Defendant in writing of the activities which must be undertaken by Settling Defendant pursuant to the Consent Decree to complete the RA and to achieve the Performance Standards. Provided, however, that EPA may only require Settling Defendant to perform such activities pursuant to this Section to the extent that such activities are consistent with the "scope of the remedy selected in the 1992 ROD," as that term is defined in Paragraph 11.b of the Consent Decree and any investigations and response actions required pursuant to Paragraph 10 of the Consent Decree. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and SOW or require Settling Defendant to submit a schedule to EPA for approval pursuant to Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree. Settling Defendant shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to its right to invoke the dispute resolution procedures set forth in Section XX of the Consent Decree. Settling Defendant shall then submit a further report on the specified activities and tasks and certification signed by a New Jersey-State licensed professional engineer, within thirty (30) days after completion of the specified activities and tasks. Any modifications to the Final Remedial Action Report required by EPA shall be in accordance with the procedures set forth in the Consent Decree.

E. If EPA concludes, based on the initial or any subsequent report requesting Certification of Completion of the Remedial Action and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been performed in accordance with the Consent Decree and that the Performance Standards have been achieved, EPA will so certify in writing to Settling Defendant. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of the Consent Decree including, but not limited to, Section XXII (Covenants Not to Sue by Plaintiff). Certification of Completion of the Remedial Action shall not affect Settling Defendant's

obligations under the Consent Decree.

F. During performance of the O&M phase, the Settling Defendant may identify and request EPA's approval of modifications to the work specified in this SOW and/or in work plans developed thereunder.

1. Such proposed modifications may be submitted to EPA for consideration if the Settling Defendant demonstrates that such modifications would maintain or enhance the cleanup of groundwater at the Site, or the monitoring of such cleanup. Such proposed modifications may include modifications to the components of the O&M system if those modifications do not prevent compliance with applicable Federal and/or State effluent discharge criteria.

2. Any modification to the work specified in this SOW and/or in work plans developed thereunder requested by the Settling Defendant that pertains to the aquifer restoration shall be addressed in accordance with Section VII.G., below.

3. EPA will either approve, require revision to, or disapprove any request for modifications.

G. Goal for Aquifer Restoration

1. As set forth in the ROD, the goal of the selected remedy is to capture and treat the contaminated groundwater in an attempt to restore the aquifer to Federal and State drinking water standards; to control or limit the future off-site migration of the contaminated groundwater; and to minimize the potential for direct exposure of the populace to the contaminated groundwater.

2. The Performance Standards for aquifer restoration at the Site are the Federal and State Maximum Contaminant Levels for the contaminants set forth in the ROD. The Settling Defendant shall operate the O&M system until the Performance Standards have not been exceeded for a period of three (3) consecutive years, or a shorter period if approved by EPA in its sole discretion.

3. The Settling Defendant may petition EPA in writing for authorization to modify the work specified in this SOW and/or in work plans developed thereunder if, based on the results of groundwater monitoring, the Settling Defendant believes that some or all of the groundwater Performance Standards specified in the ROD will not be achievable. The Settling Defendant shall not submit such a petition until they have operated the O&M system for at least three (3) years from the date the Settling Defendants takes over the operation of the O&M system, or a shorter

period if approved by EPA in its sole discretion.

4. The Settling Defendant's petition for authorization to modify the work specified in this SOW and/or in work plans developed thereunder shall include, at a minimum, the following information, as well as any other information and analyses EPA requests prior to or following submission of the petition:

   a. A list identifying all Performance Standards that have not been met;

   b. A description of any changes in the conceptual model for Site contamination since issuance of the ROD, including geological, hydrogeologic, and geochemical characterizations;

   c. Comprehensive groundwater monitoring data relevant to the groundwater remedy implemented;

   d. An analysis of the performance of the groundwater remedy which describes the spatial and temporal trends in groundwater contaminant concentrations within the groundwater plume(s), as well as any reduction or changes in the overall size or location of the groundwater plume(s);

   e. A description of any proposed contingency measures; and

   f. A predictive analysis of the approximate time frame required to achieve the Performance Standards with both the existing groundwater remediation system and that to be implemented with any proposed contingency measures using methods appropriate for the data and Site-specific conditions. Such analysis shall also address the uncertainty, if any, inherent in these predictions.

The petition shall not be deemed complete until all information and analyses required and/or requested by EPA are submitted by the Settling Defendant.

H. If, based on the results of groundwater monitoring, EPA believes that one or more of the groundwater Performance Standards specified in the ROD is not achievable, and the Settling Defendant has not petitioned EPA in writing for authorization to amend the work specified in this SOW and/or in work plans developed thereunder, EPA may require the Settling Defendant to implement contingency measures and to submit a Contingency Measures Plan that is designed to achieve the revised Performance Standards required by EPA pursuant to this subparagraph, to the extent that such measures are consistent with the "scope of the remedy selected in the 1992 ROD," as that term is defined in Paragraph 11.b. of the Consent Decree and any investigation and response actions

required pursuant to Paragraph 10 of the Consent Decree.

I. A Contingency Measures Plan shall be submitted to EPA by the Settling Defendant within sixty (60) days of receipt of EPA's written determination that contingency measures are appropriate. The Contingency Measures Plan shall:

a. Address design, construction, and O&M of the contingency measures, as appropriate;

b. Include work plans developed hereunder as appropriate; and

c. Include a schedule for the implementation of the contingency measures.

J. EPA will either approve the Contingency Measures Plan or disapprove and/or require modification of such plan, in accordance with the procedures set forth in the Consent Decree.

K. The Settling Defendant shall commence the implementation of the Contingency Measures Plan within thirty (30) days of receipt of EPA's written approval of the Contingency Measures Plan.

L. No action taken by EPA pursuant to Section VII.G. of the SOW, including EPA's decision on the Settling Defendant's petition(s), shall be subject to dispute resolution under Section XX of the Consent Decree or judicial review.

VIII. GROUNDWATER INVESTIGATION

Prior to lodging of the Consent Decree, the Settling Defendant shall submit to EPA, for its review and approval, an Investigation Work Plan ("IWP") detailing activities to investigate and delineate any groundwater contamination that may have migrated beyond the Higgins Farm property borders and its potential impact.

The IWP shall contain a detailed description of activities to be performed, including all necessary figures; drawings showing locations, and details for sampling and analyses; a schedule for the implementation of the IWP; and all other appropriate details of the proposed activities.

EPA will either approve the IWP or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree.

A. Settling Defendant shall begin implementing the requirements of the IWP within thirty (30) days of entry of the Consent Decree or EPA's approval of the IWP, whichever is later.

B. Within forty-five (45) days after completing the activities required pursuant to the

IWP, Settling Defendant shall submit to EPA for review, a written investigatory report detailing all activities conducted, providing validated analytical sampling results summarizing data collected and its location, identifying the extent of any groundwater contamination that has migrated beyond the Higgins Farm property borders; and describing potential impacts. EPA will either approve the report or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree.

C. Within thirty (30) days of EPA's approval of the investigatory report, Settling Defendant shall submit to EPA a letter report providing the Settling Defendant's recommendations.

D. After review of the letter report providing the Settling Defendant's recommendations, Settling Defendant shall perform all additional studies and/or response actions which EPA determines are necessary to address any off-Site groundwater contamination, to the extent consistent with paragraph 10 (e) of the Consent Decree. EPA will notify Settling Defendant of its determination in writing. If EPA determines that additional studies, which may include feasibility studies, and/or response actions are necessary, Settling Defendant shall submit additional work plan(s) and corresponding schedule(s) within forty-five (45) days of EPA's determination. The work plan(s) shall be prepared in accordance with EPA's publications: Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA Interim Final (EPA/540/G-89/0004, October 1988) and Remedial Design/Remedial Action Handbook (EPA/540/R-95/059) depending on the nature of the additional studies and/or response actions to be performed. EPA will either approve the work plan(s) or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree. Settling Defendants will then implement the requirements of the work plan(s) within fifteen (15) days of EPA's approval.

IX. POST-REMEDIATION MONITORING PLAN

A. Within thirty (30) days of the date on which all designated groundwater monitoring points have recorded readings less than or equal to the Performance Standards specified in the ROD and this SOW for three consecutive years (or a shorter period if approved by EPA in its sole discretion), Settling Defendant shall submit to EPA a Post-Remediation Monitoring ("PRM") Plan.

B. The PRM Plan shall include, at a minimum, the following:

1. A QAPP and FSP for PRM activities consistent with Section V above;

2. An HSP for PRM activities consistent with Section VI, above;

3. A description of work to be performed under PRM activities; and

4. A PRM schedule that identifies the frequency of monitoring and when these activities will commence.

C. EPA will either approve the PRM Plan, or require modification(s) in accordance with the procedures set forth in Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree.

X. POST-REMEDIATION MONITORING

A. Upon EPA's approval of the PRM Plan, Settling Defendant shall commence with the PRM program for a period of three (3) years, in accordance with the PRM Plan, which includes the PRM schedule.

B. If groundwater contaminant concentrations increase above the Performance Standards (as specified in the ROD and this SOW) during post-remediation monitoring, EPA will evaluate the need for and may require Settling Defendant to reinstate the O&M system.

C. Notice of Completion and Final Report for Post-Remediation Monitoring

1. Within five (5) days of the completion of post-remediation monitoring, Settling Defendant shall submit to EPA a Notice of Completion for Post-Remediation Monitoring. The Notice of Completion for Post-Remediation Monitoring shall be signed by a New Jersey State-licensed professional engineer who shall certify that the PRM activities have been completed in full satisfaction of the requirements of the Consent Decree, this SOW, and all plans, specifications, schedules, reports and other items developed hereunder.

2. Within thirty (30) days of the completion of post-remediation monitoring, Settling Defendant shall submit to EPA a Final Report for Post-Remediation Monitoring. The Final Report for Post-Remediation Monitoring shall summarize the work performed under the PRM Plan and the data so generated. Deliverables under the Final Report for Post-Remediation Monitoring shall be signed by a New Jersey State-licensed professional engineer who shall certify that the PRM activities and report deliverables have been completed in full satisfaction of the requirements of the Consent Decree, this SOW, and all plans, specifications, schedules, reports and other items developed hereunder. Any modifications to the Final Report for Post-Remediation Monitoring required by EPA shall be in accordance with the procedures set forth in the Consent Decree.

3. EPA will determine whether the PRM activities or any portion(s) thereof

have been completed in accordance with the standards, specifications, and reports required by the Consent Decree. If EPA determines that PRM activities have not been so completed, EPA will notify Settling Defendant in writing of those tasks which must be performed to complete the post-remediation monitoring. Settling Defendant shall then implement the specified activities and tasks in accordance with the specifications and schedules established by EPA and shall then submit a further report on the specified activities and tasks, certified by a New Jersey-State licensed professional engineer, within thirty (30) days after completion of the specified activities and tasks. EPA will notify Settling Defendant in writing when PRM activities have been completed in accordance with the requirements of the Consent Decree.

4. After EPA issues the Certification of Completion of Post-Remediation Monitoring, the Settling Defendant shall commence decommissioning and Site restoration activities in accordance with the O&M Manual.

XI. CERTIFICATION OF COMPLETION OF THE WORK

A. After the Settling Defendant concludes that all phases of the Work for the Higgins Farm Site have been fully performed, Settling Defendant shall schedule and conduct a pre-certification inspection to be attended by EPA and the State. If, after the pre-certification inspection, Settling Defendant still believes that the Work has been fully performed, Settling Defendant shall submit a written report ("Completion Report") by a New Jersey State-licensed professional engineer stating that the Work for the Higgins Farm Site has been completed in full satisfaction of the requirements of the Consent Decree.

1. The Completion Report shall include, but not be limited to, the following elements:

a. Work/Site Decommissioning Activities: A description shall be provided of the Work performed under the Consent Decree, including time frames, cleanup levels achieved, materials and/or equipment used, and all Site activities. The name(s) and specific role(s) of all contractor(s) shall be provided. The Settling Defendant shall verify that all equipment and facilities used have been decontaminated, decommissioned, and removed from the Site, if appropriate.

b. Certification: The draft Completion Report shall include a certification statement in accordance with the Consent Decree, Section XV, signed by a responsible corporate official of the Settling Defendant or the Settling Defendant's Project Coordinator, which states the following:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

B. If, after review of the Completion Report, EPA, after a reasonable opportunity for review and comment by the State, determines that any portion of the Work has not been completed in accordance with the Consent Decree, EPA will notify the Settling Defendant in writing of the activities that must be undertaken by the Settling Defendant pursuant to the Consent Decree to complete the Work. Provided, however, that EPA may only require the Settling Defendant to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedy selected in the 1992 ROD," as that term is defined in Paragraph 11.b. of the Consent Decree and any investigations and response actions required pursuant to Paragraph 10 of the Consent Decree. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and this SOW or require the Settling Defendant to submit a schedule to EPA for approval pursuant to Section XII (EPA Approval of Plans and Other Submissions) of the Consent Decree. Settling Defendant shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XX of the Consent Decree.

C. If EPA concludes, based on the initial or any subsequent request for Certification of Completion of the Work by Settling Defendant and after a reasonable opportunity for review and comment by the State, that the Work has been performed in accordance with the Consent Decree, EPA will so notify Settling Defendant in writing.

ATTACHMENTS

Attachment: Permit Equivalencies

Attachment A

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Bureau of Air Quality Engineering
401 East State Street - 2nd Floor
CN-027
Trenton, New Jersey 08625-0027

Robert C. Shinn, Jr.
Commissioner

VIA CERTIFIED MAIL

Joyce Harney
EPA Remedial Project Manager
U.S. EPA - Region II
290 Broadway
New York, New York 10007-1866

Reference: Air Pollution Control Permit Equivalent to Construct and Operate a Groundwater Treatment System at Higgins Farm Superfund Site

APPLICANT NAME:	U.S. EPA - Region II 290 Broadway New York, New York 10007-1866
PROJECT LOCATION:	Higgins Farm Superfund Site Franklin Township, New Jersey
COUNTY:	Somerset
APPLICANT'S DESIGNATION OF STACKS:	Process Venting Stacks Air Stripper Stack
APPLICATION LOG #'s:	01-95-0507 and 01-95-0508
APPROVAL DATE:	APRIL 13, 1995
PERMIT CERTIFICATE #:	

Dear Ms. Harney:

On the basis of all the information available regarding the proposed ground water treatment system (GWTS), the New Jersey Department of Environmental Protection (Department) concludes that the proposed GWTS will meet all applicable requirements of the New Jersey Air Pollution Control Regulations codified at N.J.A.C. 7:27-1 et. seq. Accordingly, the Department issues this Equivalent Permit to Construct and Operate the GWTS described in the permit application.

You are authorized to start construction of the GWTS on the effective date of this permit equivalent. This permit equivalent incorporates by reference all the conditions in the permit application received on February 8, 1995 (dated January 27, 1995), as well as the conditions of approval listed in Attachment - I. The conditions of approval take precedence over conditions described in the application if there is any inconsistency.

You will be sent form VEM-017 at a later date. Form VEM-017 will include your New Jersey Plant ID number, and Permit Certificate number.

If you have any questions, please call Mr. John Stull at (609) 292-2137.

Sincerely,

for Iclal Atay, Chief
Bureau of Air Quality Engineering

Attachments (2)

Copy with attachments to:

Donald Patterson, Assistant Director
John Preczewski, Chief, BTS
Joann Held, Chief, BAQEval
Gil Horwitz, Bureau of Site Management
William Kuehne, Supervisor
John Stull, Engineer (3)
NRC
Permit File

ATTACHMENT - I

CONDITIONS OF AIR POLLUTION CONTROL PERMIT EQUIVALENT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

FOR

PROCESS TANKS AND 2 AIR STRIPPERS

APPLICANT: USEPA

LOCATION:
Higgins Farm Superfund Site
Franklin Township, New Jersey

COUNTY: Somerset

STACK DESIGNATIONS:
Air Stripper Stack (01-95-0507)
2 Process Venting Stacks (01-95-0508)

LOG NUMBERS:
01-95-0507
01-95-0508

DATE OF APPROVAL: APRIL 13, 1995

TABLE OF CONTENTS

I. DEFINITIONS:

Department:	New Jersey Department of Environmental Protection 401 East State Street Trenton, New Jersey 08625
BTS:	Bureau of Technical Services NJ Dept. of Environmental Protection CN-411 Trenton, NJ 08625-0411 (609) 530-4041
NRO:	Northern Regional Air Pollution Control Office NJ Dept. of Environmental Protection 1259 Route 46 East Parsippany, NJ 07054-4191 (201) 299-7700
BAQE:	Bureau of Air Quality Engineering NJ Dept. of Environmental Protection CN-027 Trenton, NJ 08625-0027 (609) 984-3023
BAQEval.	Bureau of Air Quality Evaluation NJ Dept. of Environmental Protection CN-027 Trenton, NJ 08625-0027 (609) 633-1110
USEPA:	Joyce Harney Remedial Project Manager USEPA Region II 290 Broadway - 19th Floor New York, New York 10007-1866 (212) 637-4395
TXS:	A substance listed in N.J.A.C. 7:27-17 (Toxic Substance).
VOC:	Volatile organic compounds as defined in N.J.A.C 7:27-16.
Lb/hr:	Pounds per hour emission limit based on an consecutive 60 minute period.
TPY:	Tons per calendar year

II. PERMIT TO CONSTRUCT REQUIREMENTS

This permit equivalent for the Higgins Farm groundwater treatment system (GWTS) is for the construction of the following equipment with the following design specifications:

A. SOURCE EQUIPMENT

1. Emissions from the following source equipment are collected and vented through 2 process venting stacks:

   a. Building sump tank

   b. 2 equalization tanks

   c. Reaction tank

   d. Flocculation tank

   e. Clarifier/Thickener tank

   f. Filter feed tank

   g. Regenerant waste tank

   h. Intermediate pH adjustment tank

2. Emissions from 2 air strippers are vented through 1 air stripper stack.

B. STACK PARAMETERS

1. 2 process venting stacks.

   a. Stack height = 39 feet above grade.

   b. Inside flue diameter = 6 inches at exit.

2. 1 air stripper stack.

   a. Stack height = 90 feet above grade.

   b. Inside flue diameter = 20 inches at exit.

III. PRE-OPERATIONAL REQUIREMENTS:

All requirements indicated below shall be completed before operation of the GWTS commences:

A. CONTINUOUS MONITORING AND RECORDING

1. Before operating the GWTS, the permittee shall install and calibrate a continuous process monitor and continuous data recorder to continuously monitor and continuously record the influent groundwater flow rate to the facility.

2. The process monitor and recorder shall be operational prio: to startup of the GWTS.

3. The process monitor shall be installed and calibrate: according to the recommendations of the manufacturer.

B. CONSTRUCTION NOTIFICATION

The permittee shall notify the NRO and USEPA, 10 days prior t: the start-up of the facility.

IV. CERTIFICATE TO OPERATE REQUIREMENTS

A. MAXIMUM ALLOWABLE EMISSIONS FROM THE STACKS:

During any one-hour period, the maximum emissions from th: stacks indicated below shall not exceed the limits indicated i: Table 1 below. Compliance shall be determined by analysis o: the influent groundwater concentrations, assuming 100: volatilization, using USEPA Method 624.

TABLE-1

MAXIMUM ALLOWABLE EMISSIONS FROM THE STACKS

	Process Venting Stacks	Air Strippers Stack
Benzene	5.58E-03 lb/hr	5.45E-02 lb/hr
Carbon Tetrachloride	1.54E-05 lb/hr	1.50E-04 lb/hr
Chloroform	1.54E-04 lb/hr	1.50E-03 lb/hr
1,2-Dichloroethane	1.49E-03 lb/hr	1.45E-02 lb/hr
1,1,2,2-Tetrachloroethane	3.49E-05 lb/hr	3.40E-04 lb/hr
1,1,2-Trichloroethane	5.12E-03 lb/hr	4.99E-02 lb/hr
Trichloroethene	1.02E-03 lb/hr	9.98E-03 lb/hr
Total TXS'	0.0134 lb/hr	0.1309 lb/hr
Total VOC's (includes TXS')	0.0216 lb/hr 0.095 TPY	0.210 lb/hr 0.920 TPY

B. OPERATING REQUIREMENTS

1. Operation of the facility shall not exceed 30 years from the date of startup of the facility.

2. The maximum influent flow rate to the facility shall not exceed 100 gallons per minute.

C. VISIBLE EMISSIONS

The permittee shall not use the equipment in a manner which will cause visible emissions, exclusive of visible condensed water vapor. Compliance with this provision shall be verified visually by the use of New Jersey Air Test Method 2 (N.J.A.C. 7:27B-2), or approved equivalent.

D. GENERAL PROHIBITION OF AIR POLLUTION

This equipment shall not cause any air contaminant, including an air contaminant detectable by the sense of smell, to be present in outdoor atmosphere in such quantity and duration which is, or tends to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property, except in areas over which the owner or operator has exclusive use or occupancy.

E. MONITORING AND RECORDING

1. The permittee shall operate, calibrate, test, and maintain a continuous monitor and continuous data recorder to continuously monitor and continuously record the influent flow rate to the facility, according to the directions of the manufacturer.

2. A sample of the influent groundwater shall be taken monthly and analyzed for all contaminants listed in Table 1, including total VOC's but not including total TXS, using USEPA Method 624. If the results of the first three months of sampling indicate decreasing contaminant concentrations, the permittee may petition the NRO to reduce or cease the frequency of sampling. Any petition shall include results from all previous samples.

F. RECORDKEEPING

1. The following records shall be maintained:

a. Continuous data (gallons/minute) on the influent flow rate to the GWTS.

b. Results of the periodic sampling of the influent contaminant concentrations. Results shall include maximum detected contaminant levels in the samples and corresponding lb/hr emission rates, assuming 100% volatilization.

2. All records and log books, created in a calendar year, required to be kept as part of this permit shall be maintained on site for 5 additional calendar years. At the end of the 5 year period the records and log books shall be delivered to the USEPA for storage.

G. TESTING REQUIREMENTS

The Department reserves the right to require stack emission tests to verify compliance with the emission limits specified in Table 1.

H. REPORTING REQUIREMENTS

1. The permittee shall notify, within 30 days of the completion of the remediation work, NRO and USEPA of the date of completion.

2. Any operation of the equipment which causes a release of air contaminants which poses a potential threat to public health, welfare, or the environment or might reasonably result in citizen complaints shall be reported immediately by the facility by calling the Hotline (609) 292-7172, in accordance with the Air Pollution Control Act, N.J.S.A. 26:2c-19(e).

3. Any exceedances of the influent flow rate limit or the maximum emission limits listed in Table 1 (determined through periodic influent groundwater sampling) shall be reported within 10 calendar days of the occurence, in writing, to the regional enforcement officer. The report shall include: the nature of the exceedance, the amount of the exceedance, and corrective actions taken to correct this and prevent future exceedances.

V. SPECIAL CONDITION

The permittee shall submit a screening health risk assessment for all three stacks, based on the results of the influent groundwater sampling, to the Bureau of Air Quality Evaluation, for review and approval, at least 180 calendar days prior to the expiration of the initial 5 year certificates to operate, in order to renew the certificates to operate.

ATTACHMENT - II

Administrative Hearing Request Checklist
and Tracking Form for Permits

I. Permit Being Appealed

_____
Title and Type of Permit

_____ _____
Issuance Date of Permit Permit Number

II. Person Requesting Hearing:

_____ _____
Name Name of Attorney (If applicable)

_____ _____

_____ _____
Address Address of Attorney

III. Please Include the Following Information as Part of Your Request:

A. The date the permittee received the final permit;
B. A list of all permit conditions and issues contested;
C. The legal and factual questions at issue;
D. A statement as to whether or not the permittee raised each legal and factual issues during the public comment period on the permit;
E. Suggested revised or alternative permit conditions;
F. An estimate of the time required for the hearing;
G. A request, if necessary, for a barrier-free hearing location for physically disabled persons;
H. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's processing of your hearing request to the Office of Administrative Law; and
I. This form, completed, signed and dated with all the information listed above, including attachments, to:

1. Office of Legal Affairs
ATTENTION: Adjudicatory Hearing Requests
Department of Environmental Protection
401 East State Street
CN 402
Trenton, New Jersey 08625-0402

2. Chief, Bureau of Air Quality Engineering
Department of Environmental Protection
CN 027
Trenton, New Jersey 08625-0027

3. All co-permittees (w/attachments)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

OCT 24 1997

Mr. Eugene R. Urbanik, P.E., P.P.
Resident Engineer
U.S. Army Corps of Engineers
71-A Route 518
Princeton, New Jersey 08540

Re: Higgins Farm Superfund Site

Dear Mr. Urbanik:

This letter serves to clarify discrepancies concerning the analytical requirements associated with sampling effuent from the groundwater treatment facility. As discussed with Neal Kolb, of your staff, and Anne Fung of Radian International, volatile organic compounds, semi-volatile organic compounds, dieldrin, metals and cyanide will be analyzed as specified in the enclosed table. Additionally, the following parameters will be analyzed according to the specified methods:

Parameter	Method
BOD	EPA 405.1
Total Petroleum Hydrocarbons	EPA 418.1
Total Dissolved Solids	EPA 160.1
Total Suspended Solids	EPA 160.2
Total Organic Carbon	EPA 415.1
Dissolved Oxygen*	EPA 360.1
pH*	EPA 150.1
Effluent Toxicity	Per NJDEP's August 4, 1994 permit equivalent
COD	Calculated based on BOD:COD ratio of 0.8

*To be measured in the field.

Please note it is my understanding that laboratory results will be provided in the form of CLP deliverables. Please also note that as per Carole Petersen's May 13, 1997 correspondence to George Buk, discharge to surface water should commence as early as operationally possible. As you are aware, the September 30, 1992 Record of Decision (ROD) for the Site acknowledges that the discharge limitations specified in the ROD are stringent and may be difficult to achieve with available technology. Once the system is fully operational (i.e., after completion of start-up), the effluent analyses will be reviewed by EPA and the Corps of Engineers (in consultation with the NJDEP and Radian International) to determine whether exceedances of the discharge limitations exist. As stated in Ms. Petersen's correspondence, any excursions of the discharge limitations will need to be immediately addressed, possibly including shutdown of the treatment system.

Should you have any questions, please feel free to contact me at (212) 637-4414.

Sincerely yours,

James S. Haklar, P.E., Remedial Project Manager
New Jersey Remediation Branch

Enclosure

DISCHARGE PARAMETERS
HIGGINS FARM SITE

Parameter	Detection Level* ug/l	Analysis Method
Acetone	2.0	SW-846 Method 8260A
Benzene	1.0	SW-846 Method 8260A
Bromobenzene	1.0	SW-846 Method 8260A
Carbon Disulfide	1.0	SW-846 Method 8260A
Carbon Tetrachloride	1.0	SW-846 Method 8260A
Chlorobenzene	1.0	SW-846 Method 8260A
Chloroform	1.0	SW-846 Method 8260A
2-Chlorotoluene	1.0	SW-846 Method 8260A
4-Chlorotoluene	1.0	SW-846 Method 8260A
Cis-1,2-Dichloroethene	1.0	SW-846 Method 8260A
1,1-Dichloroethane	1.0	SW-846 Method 8260A
1,2-Dichloroethane	1.0	SW-846 Method 8260A
1,1-Dichloroethene	1.0	SW-846 Method 8260A
1,2-Dichloropropane	1.0	SW-846 Method 8260A
1,1-Dichloropropene	1.0	SW-846 Method 8260A
Ethylbenzene	1.0	SW-846 Method 8260A
Trans-1,2-Dichloroethene	1.0	SW-846 Method 8260A
1,1,2,2-Tetrachloroethane	1.0	SW-846 Method 8260A
1,1,1,-2-Tetrachloroethane	1.0	SW-846 Method 8260A
1,1,1-Trichloroethane	1.0	SW-846 Method 8260A

Parameter	Detection Level* ug/l	Analysis Method
1,1,2-Trichloroethane	1.0	SW-846 Method 8260A
Trichloroethene	1.0	SW-846 Method 8260A
Trichlorofluoromethane	1.0	SW-846 Method 8260A
Tetrachloroethene	1.0	SW-846 Method 8260A
Toluene	1.0	SW-846 Method 8260A
Vinyl Chloride	1.0	SW-846 Method 8260A
Xylenes (total)	1.0	SW-846 Method 8260A
Bis(2-chloroethyl)ether	5.0	SW-846 Method 8270B
Bis(2-ethylhexyl)phthalate	5.0	SW-846 Method 8270B
2-Chlorophenol	5.0	SW-846 Method 8270B
Hexachlorobutadiene	1.0	SW-846 Method 8270B
1,2-Dichlorobenzene	10.0	SW-846 Method 8270B
1,3-Dichlorobenzene	10.0	SW-846 Method 8270B
1,4-Dichlorobenzene	10.0	SW-846 Method 8270B
Di-n-butylphthalate	5.0	SW-846 Method 8270B
Di-n-octylphthalate	5.0	SW-846 Method 8270B
Diethyl phthalate	5.0	SW-846 Method 8270B
Isopropylbenzene	1.0	SW-846 Method 8260A
Naphthalene	1.0	SW-846 Method 8260A
N-Butylbenzene	1.0	SW-846 Method 8260A

Parameter	Detection Level* ug/l	Analysis Method
N-Propylbenzene	1.0	SW-846 Method 8260A
P-Isopropyltoluene	1.0	SW-846 Method 8260A
Phenol	5.0	SW-846 Method 8270B
Sec-Butylbenzene	1.0	SW-846 Method 8260A
Tert-Butylbenzene	1.0	SW-846 Method 8260A
1,2,3-Trichlorobenzene	1.0	SW-846 Method 8260A
1,2,4-Trichlorobenzene	10.0	SW-846 Method 8260A
1,2,4-Trimethylbenzene	1.0	SW-846 Method 8260A
1,3,5-Trimethylbenzene	1.0	SW-846 Method 8260A
Dieldrin	0.002	EPA Method 608
Antimony	5.0	SW-846 6000/7000 Series Methods
Barium	20.0	SW-846 6000/7000 Series Methods
Beryllium	1.0	SW-846 6000/7000 Series Methods
Cadmium	1.0	SW-846 6000/7000 Series Methods
Chromium	10.0	SW-846 6000/7000 Series methods
Cobalt	10.0	SW-846 6000/7000 Series Methods
Copper	10.0	SW-846 6000/7000 Series Methods
Iron	100.0	SW-846 6000/7000 Series Methods
Lead	3.0	SW-846 6000/7000 Series Methods
Magnesium	5,000.0	SW-846 6000/7000 Series Methods

Parameter	Detection Level* ug/l	Analysis Method
Manganese	10.0	SW-846 6000/7000 Series Methods
Mercury	0.20	SW-846 6000/7000 Series Methods
Arsenic	8.0	SW-846 6000/7000 Series Methods
Nickel	20.0	SW-846 6000/7000 Series Methods
Vanadium	14.0	SW-846 6000/7000 Series Methods
Zinc	20.0	SW-846 6000/7000 Series Methods
Cyanide	10	SW846 Method 9012
Aluminum	100.0	SW-846 6000/7000 Series Methods

Note:* Detection levels are specified as the highest (i.e., least stringent) levels that are allowable for this project. Lower detection levels are premissable.

ORIGINAL

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
Division of Water Quality
CN 029 Trenton, NJ 08625-0029
FAX: (609) 984-7938

CHRISTINE TODD WHITMAN
Governor

ROBERT C. SHINN, J
Commissioner

MEMORANDUM

TO: Ed Putnam, Assistant Director
Remedial Planning & Design Element
Division of Publicly Funded Site Remediation

THROUGH: Dennis Hart, Director
Division of Water Quality

Nancy Immesberger, Hazardous Waste Coordinator, DWQ

FROM: for Richard DeWan, Chief
Bureau of Standard Permitting

SUBJECT: Higgins Farm Superfund Site
Franklin Township, Somerset County
Surface Water Discharge Permit Equivalent

DATE: AUG 04 1994

The attached document provides the New Jersey Pollutant Discharge Elimination System permit equivalent for the proposed discharge of treated ground water from the Higgins Farm Superfund Site to Carters Brook via an on-site pond.

The effluent limitations are subject to revision based on changes in: a) the chemical characteristics of the ground water; b) Federal or State regulations; or c) water quality criteria.

If you have any questions regarding this document, please contact either me or Walt Olivant of my staff at 292-4860.

WFR385:wjo

Attachment
c: Chief Joseph Mikulka, Northern Region-BWHW Enforcement
Chief Debra Hammond, Bureau of Permit Management
Gil Horwitz, Bureau of Site Management, DPFSR
Suzanne Dietrick, BSP

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
Division of Water Quality
CN 029 Trenton, NJ 08625-0029
FAX: (609) 984-7938

CHRISTINE TODD WHITMAN
Governor

ROBERT C. SHINN, JR.
Commissioner

APPROVED: _____ DATE: 8/4/94

Dennis Hart, Director
Division of Water Quality

SUBJECT: **Higgins Farm Superfund Site**
Franklin Township, Somerset County
Surface Water Discharge Permit Equivalent

This document will be considered the New Jersey Pollutant Discharge Elimination System (NJPDES) permit equivalent for the Higgins Farm Superfund Site. Both equivalent effluent limitations and monitoring and reporting requirements are given for the proposed discharge of an average of 75 gallons per minute (0.108 Million Gallons per Day) of treated ground water from the Higgins Farm site to Carters Brook via an on-site pond.

The permit equivalent effluent limitations in this document were taken from the U.S. EPA Record of Decision (September 1992) for the Higgins Farm site. Limitations for Flow, Dissolved Oxygen, Petroleum Hydrocarbons, Total Organic Carbon (instead of Chemical Oxygen Demand), Dieldrin, Arsenic, Mercury and Cyanide were included in this document, as required by various regulations. The Method Detection Levels (MDLs) for bis(2-Ethylhexyl) phthalate, Chromium, Copper and Nickel were not considered reasonable and were revised, as necessary, since reasonably available sampling methods with lower MDLs should be used for monitoring the proposed discharge; Nickel can reasonably be detected at the effluent limit of 13 ug/L. The limitation for Total Dissolved Solids was revised to a more appropriate level of 500 mg/L (instead of 95 mg/l.) since the surface water data used to develop the limit of 95 mg/L was considered inappropriate and the limit was too stringent for the proposed discharge.

If you have any questions regarding this document, please contact Walt Olivant of the Bureau of Standard Permitting at (609)292-4860.

HIGGINS FARM SUPERFUND SITE

Development of Effluent Limitations for the Proposed Discharge from the Higgins Farm Superfund Site to Carters Brook:

The effluent limits contained herein are for conventional and non-conventional pollutants, volatile organic, semi-volatile organic and inorganic compounds, and pesticides. Limits are developed based on applicable surface water quality criteria and appropriate standards, in accordance with N.J.A.C. 7:9B-1.1 et seq. (New Jersey Surface Water Quality Standards), N.J.A.C. 7:14A-14.1 et seq. (Oil and Grease Effluent Limitations) and N.J.A.C. 7:9-5.1 et seq. (Wastewater Discharge Requirements). Table I provides a summary of the applicable effluent limits and related site information. Table II provides the final permit equivalent effluent limitations and monitoring requirements for this site.

UNDERSTANDING THE DEVELOPMENT OF EFFLUENT LIMITATIONS AND CONDITIONS:

Effluent limitations, conditions and monitoring requirements are authorized by the Federal Water Pollution Control Act ("Clean Water Act") (33 U.S.C. 1251 et seq.) and the State Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.). These statutes are implemented by the National Pollutant Discharge Elimination System (NPDES) (40 CFR 122) and New Jersey Pollutant Discharge Elimination System (NJPDES) (N.J.A.C. 7:14A-1 et seq.) permit programs.

The NPDES and NJPDES regulations require permits to contain limits based on Water Quality Based Effluent Limitations (WQBELs). Specifically, 40 CFR 122.44(d)(1)(i) requires that all pollutants (conventional, toxic or non-conventional) that cause, have the reasonable potential to cause or contribute to an excursion above a water quality standard must be controlled by effluent limitations. Reasonable potential for an excursion above water quality criteria was evaluated using the groundwater concentration values reported for a particular parameter and the methodology developed by the United States Environmental Protection Agency (USEPA). Effluent limits for this site were evaluated using monitoring well data provided by the Division of Publicly Funded Site Remediation (DPFSR) of the New Jersey Department of Environmental Protection (Department). The effluent limits imposed for a particular parameter are the most stringent (i.e. most protective) of all applicable limits for that parameter.

Effluent limitations are developed by the following three methods, which are authorized by Section 301 of the Clean Water Act, 40 CFR 122, N.J.S.A. 58:10A-4 and N.J.A.C. 7:14A-3.13(a):

1. TECHNOLOGY BASED EFFLUENT LIMITATIONS:

Technology based effluent limitations were not used in the development of effluent limits for this site.

2. WATER QUALITY BASED EFFLUENT LIMITATIONS:

Water Quality Based Effluent Limitations (WQBELs) are imposed when limits more stringent than technology based limits are required to protect the receiving water; WQBELs are developed to assure compliance with the New Jersey Surface Water Quality Standards and the Federal Water Quality Standards (40 CFR 131).

In general, the procedure used to develop a WQBEL for this site was the more stringent of the applicable, either for human health or aquatic life protection, instream numeric water quality criteria for a particular parameter or the known surface water concentration of the parameter; if the more stringent limit was below an acceptable Method of Detection Level (MDL), then the MDL was imposed as the limit for reporting purposes.

3. MISCELLANEOUS EFFLUENT LIMITATIONS AND CONDITIONS:

Miscellaneous effluent limitations and conditions are required by federal, state and/or regional statutes and regulations to ensure adequate protection of the environment and human health. Best Professional Judgment (BPJ) determinations are used to develop effluent limits and are authorized by Section 402 (a)(1) of the Clean Water Act.

DESCRIPTION OF SPECIFIC LIMITATIONS AND CONDITIONS

A. MISCELLANEOUS EFFLUENT LIMITATIONS

Monitoring and reporting requirements for Flow are included pursuant to N.J.A.C. 7:14A-3.13(a)(9)(i)(2).

Limitations and conditions for Biochemical Oxygen Demand (BOD5) are imposed pursuant to the Minimum Treatment Requirements contained in N.J.A.C. 7:9-5.8 for FW2-NT waters and by considering that a BOD5 limit of 25 mg/l is economically and reasonably achievable since similar discharges have been able to meet this limit.

Limitations and conditions for Dissolved Oxygen (DO) are imposed based upon N.J.A.C. 7:9B-1.14(c) for FW2-NT waters. A minimum value of 5.0 mg/l is imposed as the DO limitation at all times.

Limitations and conditions for pH are imposed based on WQBELs/BPJ and are considered economically and reasonably attainable limits.

Limitations and conditions for Petroleum Hydrocarbons are imposed in accordance with the New Jersey Oil and Grease Effluent Limitations, N.J.A.C. 7:14A-14.1 et seq.

Limitations and conditions for Total Organic Carbon (TOC) are imposed based upon N.J.A.C. 7:9-5.5, which allows for use of TOC in combination with BOD5, as an appropriate indicator of pollution levels and by considering that a TOC limit of 50 mg/l is economically and reasonably achievable since similar discharges have been able to meet this limit. A limitation was chosen for TOC instead of Chemical Oxygen Demand since TOC is a more appropriate indicator of pollution for this discharge.

B. WATER QUALITY BASED EFFLUENT LIMITATIONS

The USEPA's NPDES regulations at 40 CFR 122.44(d)(1) require a determination to be made as to whether or not a discharge causes, has the potential to cause or contributes to an instream excursion of narrative or numeric criteria. Available site data was evaluated to identify pollutants present above the level of method detection, and either cause, show a reasonable potential to cause or contribute to an instream excursion of water quality criteria, to satisfy this requirement.

WQBELs were taken from the USEPA, September 1992, Record of Decision (ROD) for the Higgins Farm site; only a daily maximum permit equivalent effluent limitation is incorporated for each parameter to be consistent with the surface water discharge limits summarized in the ROD.

WQBELs are imposed in accordance with the recommendations in the USEPA "Technical Support Document for Water Quality-based Toxics Control" (paragraph 5.7.1), which states that when the dilution for a particular effluent is less than 100:1, permit limits should be based on both mass and concentration to ensure attainment of water quality standards. A dilution value of 1.0 was used since the receiving water (Carters Brook via an on-site pond) is considered "intermittent" based upon N.J.A.C. 7:9B-1.1 et seq. Mass effluent limits are essentially imposed by limiting the flow in the permit equivalent to the proposed average effluent flow rate of 75 gallons per minute (0.108 Million Gallons per Day) and imposing the concentration effluent limits from the ROD.

Limitations and conditions for Total Dissolved and Total Suspended Solids; Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, 1,1,2-Trichloroethane, Trichloroethylene, Vinyl Chloride; bis(2-Chloroethyl) ether, bis(2-Ethylhexyl)Phthalate, Hexachlorobutadiene; Dieldrin; Total Recoverable Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Nickel, Vanadium, Zinc; and Total Cyanide are imposed based on exceedance of water quality criteria. Limitations for Dieldrin, Arsenic, Mercury and Cyanide were imposed in the permit equivalent based on sampling data collected for the Design Basis Report, which indicated these pollutants were present in the groundwater at the site at levels exceeding water quality criteria.

Whole Effluent Toxicity

Water quality based acute and chronic whole effluent toxicity limitations were calculated in accordance with the methods contained in N.J.A.C. 7:9B-1.6(c)(5); specifically, 1.6(c)(5)(i) for the acute toxicity limit and 1.6(c)(5)(iii) for the chronic limit. The low flow value used to calculate both the acute and chronic toxicity limitations, pursuant to these regulations, was an MA7CD10 value of zero (0) since the receiving stream (Carters Brook via an on-site pond) is considered "intermittent". The effluent flow value of 0.108 MGD was utilized in the calculations.

N.J.A.C. 7:9B-1.6(c)(5)(i) allows for the use of two application factors in the calculation of the acute toxicity limit. The application factor of 0.05 is used where toxicity is due to non-persistent substances and the more protective application factor of 0.01 is used where toxicity is known or suspected to be from persistent substances. The Department has conservatively assumed that the substances found in the effluent are persistent and the more stringent application factor of 0.01 was used in the calculation of the acute toxicity limit. The calculation of the water quality based toxicity limitations resulted in an acute toxicity limitation of No Measurable Acute Toxicity (NMAT) and a chronic toxicity limitation of No Observable Effect Concentration (NOEC) = 100% effluent.

The USEPA Technical Support Document generally states that only the most stringent limit is imposed as the final limit for a given parameter since the most stringent limit alone will be fully protective of water quality. Therefore, the acute and chronic toxicity limitations were compared to determine the most protective (i.e. most stringent) limit. The Department's "Wastewater Discharge to Surface Water Permits Technical Manual" outlines the procedures for comparing these limits. Those procedures involve the conversion of both toxicity limits to "toxic units". The chronic toxicity limitation of NOEC=100% effluent is the most stringent of the applicable acute and chronic toxicity limitations and is selected for this discharge.

The Department's document entitled "Interim Chronic Toxicity Testing Methodologies for Use in the NJPDES Permit Program, Version 1.0, February 1989" is included as part of this NJPDES permit equivalent for the Higgins Farm Superfund Site in accordance with N.J.A.C. 7:14A-2.9(a).

The initial monthly chronic toxicity testing frequency is included to establish a database for toxicity to determine if the discharge is in consistent compliance with the established WQBEL. The reduction of the toxicity testing frequency, after the completion and submission of two tests in compliance with the chronic toxicity limit, is based on previous experience that the contaminant concentrations should decrease with time and pumping at the site.

C. MONITORING FREQUENCY AND MANDATORY CESSATION OF DISCHARGE

The monitoring frequency of weekly is imposed for each of the parameters where limitations are imposed based on water quality. This is consistent with the USEPA Technical Support Document (paragraph 5.5.3), which states that the statistical procedure for calculating limits should use at least four samples for derivation of the average monthly limit and for the permit monitoring frequency. The sample type for all metals is composite as the discharge is continuous and a composite sample will provide a more representative data set than a grab sample.

The requirement for cessation of discharge (should limitation violations occur) is in accordance with N.J.A.C. 7:14A-2.8(d) since new sources do not qualify for compliance schedules and with N.J.A.C. 7:14A-2.5(a)(6) which states that "The permittee shall take corrective actions including ceasing discharge to mitigate the effects of violating a NJPDES permit." Furthermore, temporary suspension of pumping should have less detrimental environmental impact to the receiving water than the discharge of effluent which exceeds applicable surface water quality criteria or appropriate standards.

PERMIT EQUIVALENT SUMMARY - TABLE 1

OUTFALL 001

Facility: Higgins Farm Superfund Site Latitude: 40° 24' 20" N Longitude: 74° 36' 10" W
Type of Wastewater: Treated Groundwater Average Flow: 75 GPM Discharged to: Carters Brook

PARAMETER ALL VALUES ARE IN ug/L UNLESS OTHERWISE NOTED	HIGHEST DETECTED GROUNDWATER VALUE (1)	WATER QUALITY BASED EFFLUENT LIMITATION (2) DAILY MAXIMUM	PERMIT EQUIVALENT EFFLUENT LIMITATION DAILY MAXIMUM
Flow (Million Gallons/Day)	---	---	0.108 average
BOD5 (mg/L)	37	---	25 (3)
Dissolved Oxygen (mg/L)	---	5.0 minimum	5.0 minimum
pH (standard units)	8.4	6.5 - 8.5	6.5 - 8.5
Petroleum Hydrocarbons (mg/L)	19	---	15 (4)
Total Organic Carbon (mg/L)	---	---	50 (5)
Total Dissolved Solids (mg/L)	291	500	500
Total Suspended Solids (mg/L)	593	40	40
Benzene	1200	1.0	1.0
Carbon Tetrachloride	3.3	0.25	1.0 (6)
Chlorobenzene	1100	1.0	1.0
Chloroform	210	1.0	1.0
1,2-Dichloroethane	320	0.38	1.0 (6)
1,1-Dichloroethylene	10	0.057	1.0 (6)
cis-1,2-Dichloroethylene	76	1.0	1.0
1,1,2,2-Tetrachloroethane	9.0	0.17	1.0 (6)
Tetrachloroethylene	740	0.8	1.0 (6)
1,1,2-Trichloroethane	1100	0.6	1.0 (6)
Trichloroethylene	220	1.0	1.0
Vinyl Chloride	86	1.0	1.0
bis(2-Chloroethyl) ether	2.0	0.031	5.0 (6)
bis(2-Ethylhexyl) phthalate	10	1.8	2.5 [625] (6)
Hexachlorobutadiene	5.3	0.44	1.0 (6)
Dieldrin	0.081	0.00014	0.002 [608] (6)
Total Recoverable Aluminum	304,000	87	100 (6)
Total Recoverable Antimony	38	5.0	5.0
Total Recoverable Arsenic	9.8	0.017	0.5 [200.9] (6)
Total Recoverable Barium	1890	28	28
Total Recoverable Beryllium	26	0.0077	1.0 (6)
Total Recoverable Cadmium	4.1	0.012	1.0 (6)
Total Recoverable Chromium	1070	0.29	5.0 [200.7] (6)
Total Recoverable Cobalt	826	5.2	10 (6)
Total Recoverable Copper	8750	2.3	5.0 [200.7] (6)
Total Recoverable Iron	436,000	300	300
Total Recoverable Lead	81	0.28	0.3 (6)
Total Recoverable Manganese	24800	50	50
Total Recoverable Mercury	0.10	0.012	0.2 [245.1] (6)
Total Recoverable Nickel	237	13	13
Total Recoverable Vanadium	1490	14	14
Total Recoverable Zinc	811	47	47
Total Cyanide	14	5.2	5.2
Chronic Toxicity (% Effluent)	---	NOEC = 100 % (7)	NOEC = 100 % (7)

(1) These values were taken from groundwater monitoring well data provided by the Division of Publicly Funded Site Remediation as part of the Remedial Investigation Report (March 1992) and the Design Basis Report (December 1993).

(2) Since the receiving water, an on-site pond to Carters Brook (FW2-NT), has a MA7CD10 low flow of zero (0) cubic feet per second, it is considered "intermittent" and no dilution credit is given in the development of WQBELs. WQBELs were taken from the USEPA Record of Decision (September 1992) for the Higgins Farm site.

(3) Based on Minimum Treatment Requirements (N.J.A.C. 7:9-5.8) for FW2-NT waters and similar effluent limits for discharges of treated groundwater into surface waters.

(4) Based on Oil and Grease Effluent Limitations (N.J.A.C. 7:14A-14.1 et seq.); also, no visible sheen.

(5) Based on Use of Indicators of Pollution Levels (N.J.A.C. 7:9-5.5) and similar effluent limits for discharges of treated groundwater into surface waters.

(6) A Discharge Reporting Level (DRL) is specified, as necessary, since the effluent concentration limitation is less than the detection level of published analytical methods. The discharger is required to analyze the wastewater according to the analytical test method [in brackets], if specified. The discharger shall meet the applicable DRL, not the specified effluent limitation, for reporting purposes.

(7) "NOEC" is the abbreviation for "No Observable Effect Concentration". This limitation is equivalent to 1.0 TU_c (Chronic Toxic Units) maximum.

I. Effluent Limitations and Monitoring Requirements for Higgins Farm (Outfall 001) - TABLE II

There shall be no discharge of floating solids or visible foam in other than trace amounts and no visible sheen.

All samples taken in compliance with the specified monitoring requirements shall be representative of the monitored outfall and taken after the final treatment step, prior to discharge into the receiving stream.

PARAMETER ALL VALUES ARE IN ug/L UNLESS OTHERWISE NOTED	EFFLUENT LIMITATION MONTHLY / DAILY AVERAGE / MAXIMUM	DRL * [EPA TEST METHOD]	MONITORING REQUIREMENTS FREQUENCY / SAMPLE TYPE **
Flow (Million Gallons/Day)	0.108 / NL	---	Continuous / Meter
BOD5 (mg/L)	NL / 25	---	Semimonthly / Grab
Dissolved Oxygen (mg/L)	5.0 minimum	---	Weekly / Grab
pH (standard units)	6.5 - 8.5	---	Weekly / Grab
Petroleum Hydrocarbons (mg/L)	NL / 15	---	Semimonthly / Grab
Total Organic Carbon (mg/L)	NL / 50	---	Semimonthly / Composite
Total Dissolved Solids (mg/L)	NL / 500	---	Weekly / Composite
Total Suspended Solids (mg/L)	NL / 40	---	Weekly / Composite
Benzene	NL / 1.0	---	Weekly / Grab
Carbon Tetrachloride	NL / 0.25 *	1.0	Weekly / Grab
Chlorobenzene	NL / 1.0	---	Weekly / Grab
Chloroform	NL / 1.0	---	Weekly / Grab
1,2-Dichloroethane	NL / 0.38 *	1.0	Weekly / Grab
1,1-Dichloroethylene	NL / 0.057 *	1.0	Weekly / Grab
cis-1,2-Dichloroethylene	NL / 1.0	---	Weekly / Grab
1,1,2,2-Tetrachloroethane	NL / 0.17 *	1.0	Weekly / Grab
Tetrachloroethylene	NL / 0.8 *	1.0	Weekly / Grab
1,1,2-Trichloroethane	NL / 0.6 *	1.0	Weekly / Grab
Trichloroethylene	NL / 1.0	---	Weekly / Grab
Vinyl Chloride	NL / 1.0	---	Weekly / Grab
bis(2-Chloroethyl) ether	NL / 0.031 *	5.0	Weekly / Composite
bis(2-Ethylhexyl) phthalate	NL / 1.8 *	2.5 [625]	Weekly / Composite
Hexachlorobutadiene	NL / 0.44 *	1.0	Weekly / Composite
Dieldrin	NL / 0.00014 *	0.002 [608]	Weekly / Composite
Total Recoverable Aluminum #	NL / 87 *	100	Weekly / Composite
Total Recoverable Antimony #	NL / 5.0	---	Weekly / Composite
Total Recoverable Arsenic #	NL / 0.017 *	0.5 [200.9]	Weekly / Composite
Total Recoverable Barium #	NL / 28	---	Weekly / Composite
Total Recoverable Beryllium #	NL / 0.0077 *	1.0	Weekly / Composite
Total Recoverable Cadmium #	NL / 0.012 *	1.0	Weekly / Composite
Total Recoverable Chromium #	NL / 0.29 *	5.0 [200.7]	Weekly / Composite
Total Recoverable Cobalt #	NL / 5.2 *	10	Weekly / Composite
Total Recoverable Copper #	NL / 2.3 *	5.0 [200.7]	Weekly / Composite
Total Recoverable Iron #	NL / 300	---	Weekly / Composite
Total Recoverable Lead #	NL / 0.28 *	0.3	Weekly / Composite
Total Recoverable Manganese #	NL / 50	---	Weekly / Composite
Total Recoverable Mercury #	NL / 0.012 *	0.2 [245.1]	Weekly / Composite
Total Recoverable Nickel #	NL / 13	---	Weekly / Composite
Total Recoverable Vanadium #	NL / 14	---	Weekly / Composite
Total Recoverable Zinc #	NL / 47	---	Weekly / Composite
Total Cyanide	NL / 5.2	---	Weekly / Composite
Chronic Toxicity (% Effluent)	NOEC - 100 %	---	– SEE PAGE 8 –

N.L. - Not limited; however, both monitoring and reporting are required.

* - A Discharge Reporting Level (DRL) is specified, as necessary, since the effluent concentration limitation is less than the detection level of published analytical methods. The discharger is required to analyze the wastewater according to the analytical test method [in brackets], if specified. The discharger shall meet the applicable DRL, not the specified effluent limitation, for reporting purposes. Should the discharger's wastewater data indicate that a pollutant is unquantified (less than the detection level) at an analytical level greater than the DRL, the result will be evaluated by the Department to verify that all QA/QC procedures were followed by the laboratory. If QA/QC procedures were not followed, the result would be considered a "Reporting Violation" as opposed to an "Effluent Violation". If QA/QC procedures were followed, then no action would be taken on the unquantified or non-detectable value. EPA Test Method and Method Detection Level are specified in accordance with 40 CFR 136.

** - Composite as indicated in this table means 24-hour or work-day flow-proportioned composite samples.

- Analysis for this parameter shall follow the "Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements" contained in Method 200.2 and the specified analytical method. If a method is not specified, then analysis shall be done by Method 200.2 and Method 200.7, 200.8 or 200.9.

2. Chemical Specific Testing Requirements

All analyses shall be performed in accordance with N.J.A.C. 7:14A-2.5(a)(12)(ii) using an available method with sufficient sensitivity to detect the required effluent limitation.

3. Chronic Toxicity Testing Requirements (Species and Methodology)

a. Chronic toxicity tests shall be conducted concurrently, split sample, using these test species and duration:

1. Fathead minnow, (Pimephales promelas), 7 day larval survival and growth test; and
2. Ceriodaphnia dubia, 3 brood survival and reproduction test.

b. Test results shall be expressed as both the NOEC (No Observable Effect Concentration) and the LOEC (Lowest Observable Effect Concentration) for each test endpoint. If a chronic toxicity testing methodology yields NOECs from more than one test endpoint (i.e. survival, growth and/or reproduction), the most sensitive endpoint will be used to determine compliance. If more than one test species is being used, then the most sensitive test species for the given test date will be used to determine compliance.

c. Testing shall be in conformance with the guidelines contained in the "Interim Chronic Toxicity Testing Methodologies for Use in the NJPDES Permit Program, Version 1.0, February 1989". The test results shall meet the acceptability criteria in these interim methods to be deemed acceptable; specifically, the criteria on page 9, item 20, for the Pimephales promelas and those on page 11, item 21, for the Ceriodaphnia dubia. If a particular test does not meet these criteria, the two split sample tests shall be repeated if two species were used or the single test shall be repeated if only one species was used.

d. The laboratory performing the toxicity testing shall be within the existing acute toxicity testing laboratory certification program established under N.J.A.C. 7:18-6.

e. Initially, split sample chronic toxicity testing shall be performed monthly, using two species, for two months or until two acceptable tests have been conducted. If the results from two acceptable split sample tests show that the effluent is consistently meeting the chronic toxicity limitation, testing shall be conducted quarterly.

f. The Department may reduce the testing requirements to a single species upon submittal of a minimum of four acceptable split sample tests if the data indicates that one species is consistently more sensitive to the discharge.

4. Monitoring Frequency and Mandatory Cessation of Discharge

a. Chronic toxicity testing shall initially be conducted on representative effluent samples on a monthly basis for two months after the commencement of discharge. If the test results show that the effluent is consistently meeting the chronic toxicity limitation of NOEC=100% effluent, then the discharge may continue (provided it meets all other specified limits). If the effluent does not meet the specified chronic toxicity limit, then the discharge shall cease until it is determined that the effluent can consistently meet the limit.

b. The discharge shall be monitored quarterly for chronic toxicity once it is demonstrated that the effluent can consistently meet the specified chronic toxicity limit in accordance with the conditions in paragraph (a) above. If at any time the discharge does not meet the chronic toxicity or chemical specific limits, then the discharge shall cease until it is determined that the effluent can consistently meet the limits.

c. The requirement for cessation of discharge in paragraphs (a) and (b) above, should the discharge not meet the specified effluent limits, is in accordance with N.J.A.C. 7:14A-2.8(d) since new sources do not qualify for compliance schedules and with N.J.A.C. 7:14A-2.5(a)(6), which states "The permittee shall take corrective action including ceasing discharge to mitigate the effects of violating a NJPDES permit" The impact to the Higgins Farm site, caused by the temporary cessation of discharge to surface water, should be less severe than the continued discharge in violation of effluent limitations

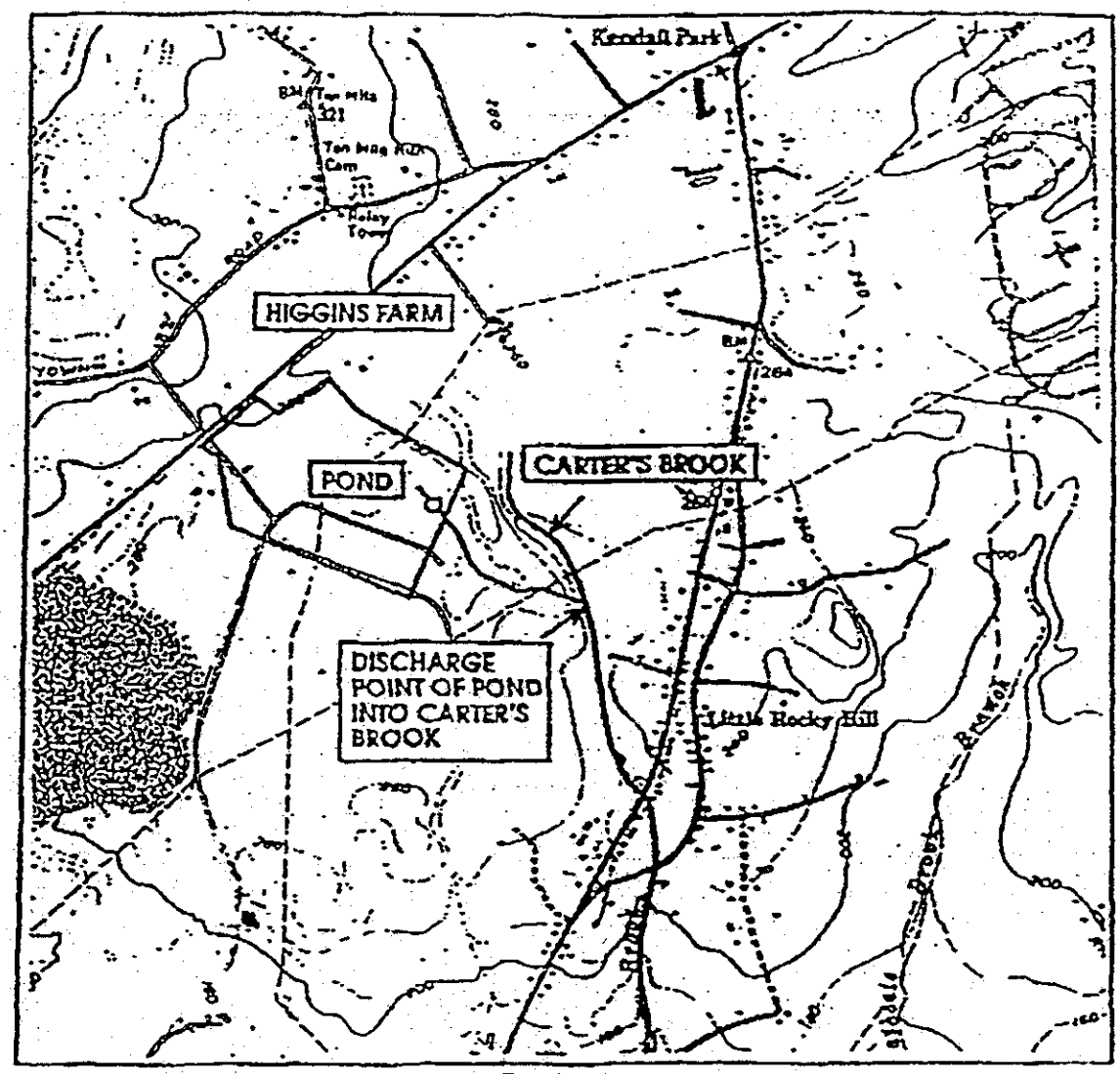
5. Reporting Requirements

a. The Bureau of Standard Permitting shall be notified one month prior to the commencement of discharge of treated waters from the Higgins Farm site to Carters Brook via an on-site pond.

b. All test results shall be summarized and reported monthly on a Discharge Monitoring Report (DMR) to be sent upon request. The most current DMR Instruction Manual (copy attached) should be followed when completing DMRs for both concentration and mass values to ensure the consistent reporting of compliance testing results to the Department. In case of any discrepancy between the NJPDES permit equivalent and the DMR Instruction Manual, the permit equivalent always takes precedence. DMRs shall be submitted within 25 days of the start of the following month after the commencement of discharge and every month thereafter until the discharge is permanently terminated. Contact the Bureau of Standard Permitting at (609)292-4860 for directions on the submittal of DMRs.

c. All monitoring shall be conducted in accordance with the Department's current Field Sampling Procedures Manual, which is available from the Maps & Publications Sales Office, Bureau of Revenue, CN 417, Trenton NJ 08625 or at (609)777-1038.

d. Chronic toxicity test results shall be reported on the "NJPDES Biomonitoring Report Form-Chronic Toxicity Tests" (copies of this form are provided to certified laboratories).



Source:
MONMOUTH JUNCTION, NEW JERSEY
7.5 minute series USGS Quadrangle maps. 1954
Photorevised 1981.

Figure 4-1
HIGGINS FARM
FIELD SURVEY OF DISCHARGE STREAM

CH2MHILL